

Models of lexical access

Overview

- Autonomous search model
- Logogen model
- Cohort model
- Connectionist models
- Differentiating among models

See book, pages 170-180

Autonomous search model

- Forster, 1976
- Search an access file to find pointer
 - This tells you where to look in master lexicon
 - Separate access files for reading, hearing, speaking
- Master lexicon divided into bins
 - Bins were organized by frequency
 - Words in a bin searched serially
 - Thus faster to find more frequent words
- Lexicon is independent of other systems

Morton's Logogen model

- Each word is represented as a logogen.
- Incoming information is checked against logogens in parallel
- Recognition: when reaches threshold level.
- Different logogens have different thresholds, depending on factors such as frequency in the language.

Marslen-Wilson's Cohort model

- Start of word activates all words that begin with that sound (cohort).
- Further information (both bottom-up & top-down) serves to narrow the choices.
- Recognition: when left with a single choice.
 - the point at which it diverges from other words - the "recognition point"

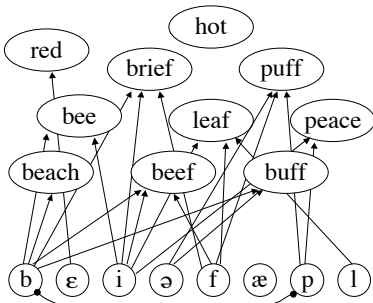
Data

- Marslen-Wilson, Brown & Zwitserlood
 - Captain vs. captive
- Gating task
 - Long words are identified prior to word ending (at recognition point).

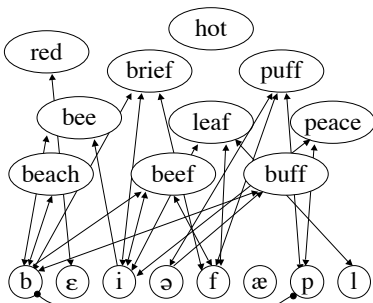
Problems with Cohort

- Most words don't diverge until after they end.
- Overemphasizes the importance of word onsets.
 - This may be problematic in fluent speech where word onsets are not known.

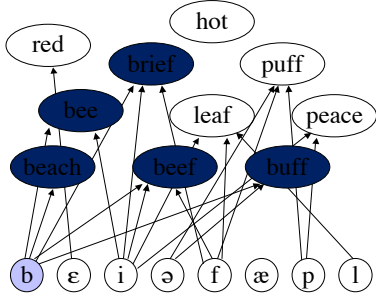
Connectionist models



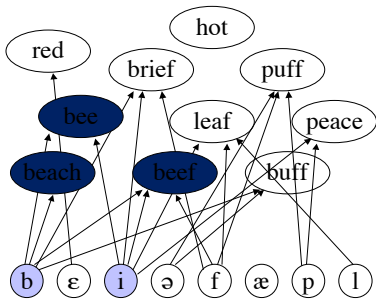
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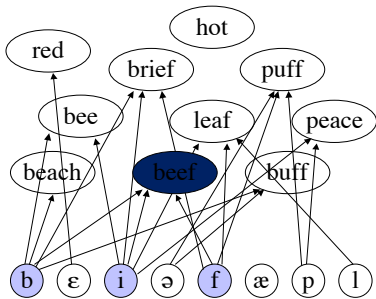
“b...” in Cohort



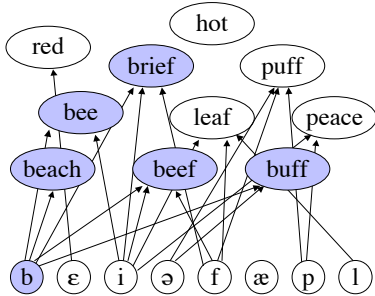
“bee...” in Cohort



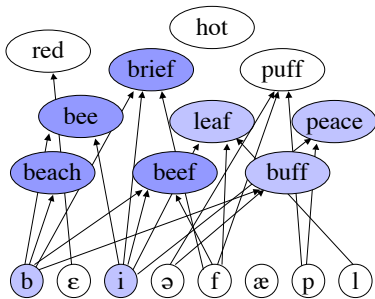
“beef” in Cohort



“b...” in connectionist



“bee...” in connectionist



Summary

- Most current lexical access models assume there is a phoneme level and a word level.
- Differences among models have to do with how these levels interact.
- Thus most models really deal with accessing the word form, while the semantic networks we talked about earlier have to do with the meaning of the word
- Presumably, we really need a combination of the two types of networks.
